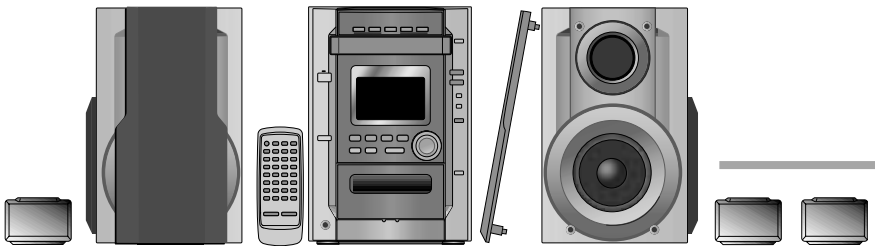
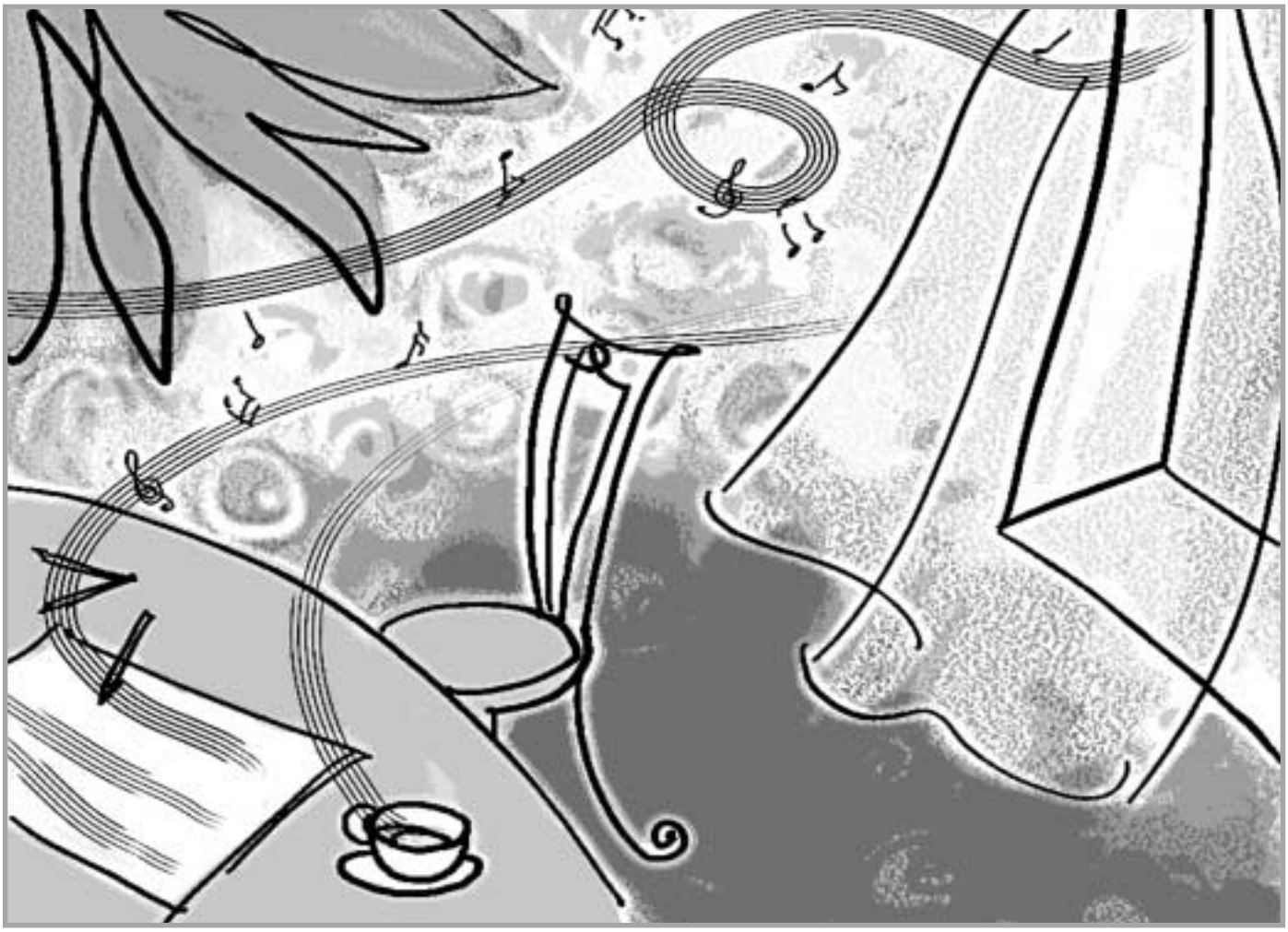
Panasonic



# CD Stereo System

Operating Instructions

Model No. **SC-AK600**



COMPACT disc DIGITAL AUDIO

Before connecting, operating or adjusting this product, please read these instructions completely.
Please keep this manual for future reference.

**For U.S.A. only**

**The servicenter list and warranty can be found on pages 29 and 30.**

P PC

RQT6243-1P

# Dear customer

Thank you for purchasing this product.
For optimum performance and safety, please read these instructions carefully.

These operating instructions are applicable to the following system.

| System | | SC-AK600 |
|---|---|---|
| Main unit | | SA-AK600 |
| Speakers | Front | SB-AK600 |
| | Center | SB-PC93 |
| | Surround | SB-PS90 |

The model number and serial number of this product can be found on either the back or the bottom of the unit.
Please note them in the space provided below and keep for future reference.

| | MODEL NUMBER | SERIAL NUMBER |
|---|---|---|
| Main unit | SA-AK600 | |
| Front speakers | SB-AK600 | |
| Center speaker | SB-PC93 | |
| Surround speakers | SB-PS90 | |

**User memo:**

**DATE OF PURCHASE** _____

**DEALER NAME** _____

**DEALER ADDRESS** _____

_____

**TELEPHONE NUMBER** _____

## CAUTION!

**THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.
DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.**

## WARNING:

**TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE, DO NOT EXPOSE THIS APPARATUS TO RAIN, MOISTURE, DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.**

## CAUTION:

**TO PREVENT ELECTRIC SHOCK MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.**

## CAUTION!

**DO NOT INSTALL, OR PLACE THIS UNIT, IN A BOOKCASE, BUILT-IN CABINET OR IN ANOTHER CONFINED SPACE. ENSURE THE UNIT IS WELL VENTILATED. TO PREVENT RISK OF ELECTRIC SHOCK OR FIRE HAZARD DUE TO OVERHEATING, ENSURE THAT CURTAINS AND ANY OTHER MATERIALS DO NOT OBSTRUCT THE VENTILATION VENTS.**

# Table of contents


## Before using

**Supplied accessories ..... 3**
**Listening caution ..... 3**
**IMPORTANT SAFETY INSTRUCTIONS ..... 4**
**Installation ..... 5**
**Connections ..... 6**
**Location of controls ..... 7**
**The remote control ..... 8**

## Disc operations

**Playing discs ..... 9**
Starting play from a specific track ..... 10
Repeat play ..... 10
Program play ..... 11
Other modes of play (CD Play Mode function) ..... 12

## Radio operations

**The radio: manual tuning ..... 13**
**The radio: preset tuning ..... 14**

## Tape operations

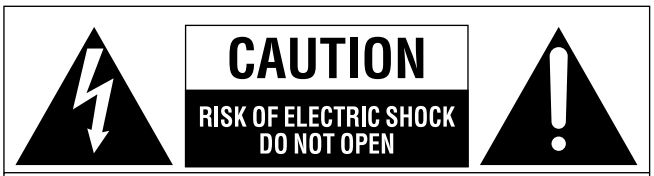
**Cassette tapes ..... 15**

## Recording operations

**Before recording ..... 16**
**Recording discs ..... 17**
**Recording the radio ..... 17**

## Sound quality/sound field operations

**Using the built-in sound quality settings ..... 18**
**Enhancing the sound quality ..... 18**
**Adjusting the bass ..... 18**
**Enjoying surround sound ..... 19**
DOLBY DIGITAL ..... 20
DOLBY PRO LOGIC ..... 20


CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE SCREWS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

## Timer and other operations


**Convenient functions ..... 22**
**Using headphones (not included) ..... 22**
**Turning DEMO off ..... 23**
**Auto-off function ..... 23**
**Setting the time ..... 23**
**Using the timers ..... 24**
Using the play/record timer ..... 24
Using the sleep timer ..... 25
**Using other equipment ..... 26**
Connecting other equipment ..... 26
Optional antenna connections ..... 26
Listening to an external digital source ..... 27
Listening to an external analog source ..... 27
Recording an external source ..... 27


## Reference


**Troubleshooting guide ..... 28**
**Servicenter List (ONLY FOR U.S.A.) ..... 29**
**Warranty (ONLY FOR U.S.A.) ..... 30**
**Product Service ..... 30**
**About discs ..... 31**
**Maintenance ..... 31**
**Specifications ..... Back Cover**


**THE FOLLOWING APPLIES ONLY IN THE U.S.A.:**

### CAUTION:

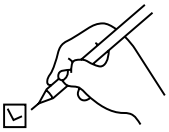
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any unauthorized changes or modifications to this equipment would void the user's authority to operate this device.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

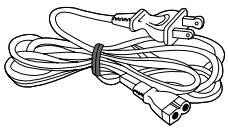
## Supplied accessories



Please check and identify the supplied accessories.
Use numbers indicated in parentheses when asking for replacement parts.

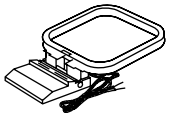
***(Only for U.S.A.)***
***To order accessories contact 1-800-332-5368 or web site (http://www.panasonic.com).***

☐ AC power supply cord ..... 1 pc.
(RJA0065-1D)

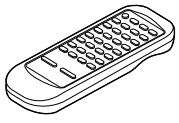


☐ FM indoor antenna ... 1 pc.
(RSA0006-J)

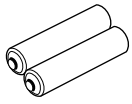
☐ AM loop antenna .... 1 pc.
(RSA0033-1)



☐ Remote control transmitter ..... 1 pc.
(N2QAGB000018)



☐ Remote control batteries ..... 2 pcs.
R6, AA, UM-3



## Listening caution

Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion—and, most importantly, without affecting your sensitive hearing.

We recommend you to avoid prolonged exposure to excessive noise.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing.
Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.
To establish a safe level:

- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:

- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

# IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the safety precautions listed below. Keep these operating instructions handy for future reference.



## Safety

1. **Power source**—Connect the unit to a power source of the type described in these instructions or as marked on the unit.
2. **Polarization**—The unit is equipped with a polarized power plug where one blade is wider than the other. This safety feature ensures that the plug fits into your household AC outlet only one way. If the plug doesn't fit one way, try reversing it. If the plug still doesn't fit, contact an electrician to replace the obsolete outlet. Do not attempt to defeat the safety purpose of the plug.
3. **Power cord protection**—Route the AC power supply cord so that it will not be walked on or pinched by items placed on or against it. Never take hold of the plug or cord with wet hands. Always grasp the plug body firmly when connecting and disconnecting it.
4. **Overloading**—When connecting the AC power supply cord, be careful not to overload the household AC outlet, extension cord, or outlet from any other device as this can result in fire or electric shock.
5. **Nonuse periods**—Turn the unit off when it is not in use. Unplug the unit from the household AC outlet if it is not to be used for a long time. Unplug the unit during lightning storms.
6. **Attachments and accessories**—Use only the attachments and accessories recommended in these operating instructions.

## Installation

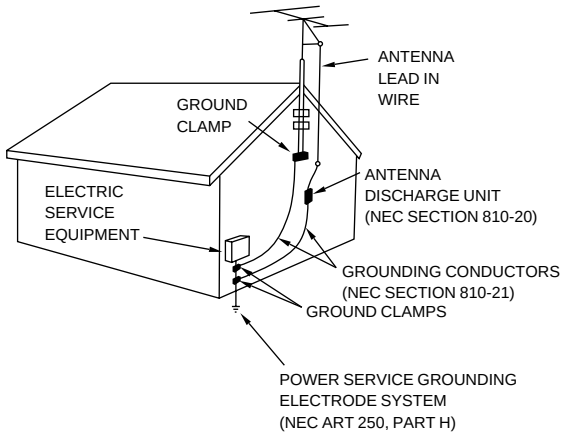
### Placement

1. **Ventilation**—Situate the unit so that it receives proper ventilation. Do not install in a confined space such as a bookcase or cabinet. Allow at least 10 cm (4 inches) clearance from the rear of the unit. To prevent the risk of electric shock or fire due to overheating ensure curtains and other materials do not obstruct the unit's ventilation.
2. **Foreign material**—Ensure objects and liquids do not get into the unit. Avoid exposing the unit to excessive smoke, dust, mechanical vibration, and shock.
3. **Magnetism**—Situate the unit away from equipment and devices that generate strong magnetic fields.
4. **Stacking**—Do not place heavy objects on top of this unit.
5. **Surface**—Place the unit on a flat, level surface.
6. **Carts and stands**—Use the unit only with carts and stands recommended by the manufacturer. Move carts with care. Sudden stops, excessive force, and uneven surfaces can cause carts to overturn.

7. **Wall and ceiling mounting**—Do not mount the unit on walls or ceilings unless specified in the instructions.

### Environment

1. **Water and moisture**—Do not use the unit near water, such as near a bathtub or swimming pool. Avoid damp basements.
2. **Heat**—Situate the unit away from heat sources, such as radiators. Do not situate where temperatures fall below 5°C (41°F) or rise above 35°C (95°F).
3. **Power lines**—Take care when setting up an outdoor antenna that it is not near overhead power lines, electric lights, or electrical circuits, and that there is no danger of the antenna falling on power lines, electric lights, or electrical circuits. When installing an outdoor antenna, take extreme care not to touch such power lines or circuits, as contact with them can be fatal.
4. **Outdoor antenna grounding**—If you connect an outdoor antenna, ground the antenna system to protect against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1990, provides information about grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. Refer to this diagram.




NEC—NATIONAL ELECTRICAL CODE

## Maintenance

(See page 31 for details.)

Unplug the unit from the household AC outlet before cleaning.
Clean with a damp cloth.
Do not use abrasive pads, scouring powders, or solvents.

## Service

1. **Damage requiring service**—The unit should be serviced by qualified service personnel if:
   (a) The AC power supply cord or the plug has been damaged; or
   (b) Objects or liquids have gotten into the unit; or
   (c) The unit has been exposed to rain; or
   (d) The unit does not operate normally or exhibits a marked change in performance; or
   (e) The unit has been dropped or the cabinet damaged.
2. **Servicing**—Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.
3. **Replacement parts**—When parts need replacing ensure the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock, or other hazards.
4. **Safety check**—After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

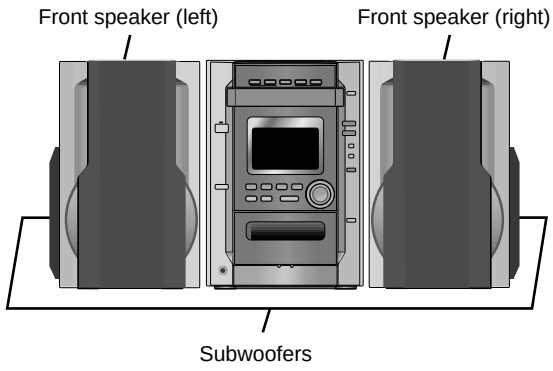
# Installation

## A Placement of front speakers

Place so that the subwoofers face out.

**Note**

- Keep your speakers at least 10mm (13/32") away from the system for proper ventilation.
- The subwoofers are located on the sides of the speakers. Leave 10-cm clearance for them to be effective.



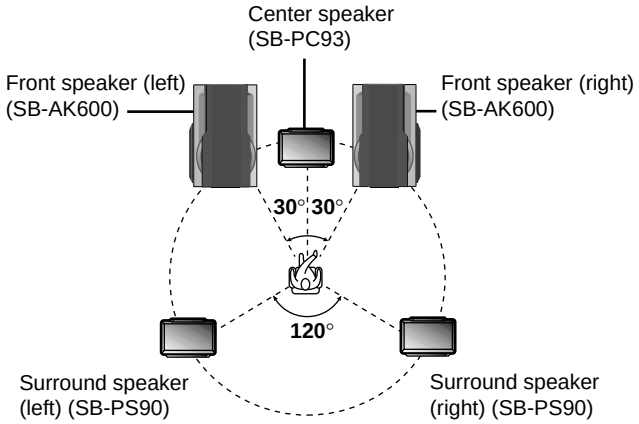

## B Placement of center/surround speakers

### Center speaker (SB-PC93)

The small speaker with the short cord is the center speaker.
The model numbers are printed on the back of the speakers.

**Note**

Do not place the center speaker on the main unit as sound quality will be affected.




The front, center, and surround speakers should be placed at approximately the same distance from the listening position. The angles in the diagram are approximate.

### Surround speakers (SB-PS90)

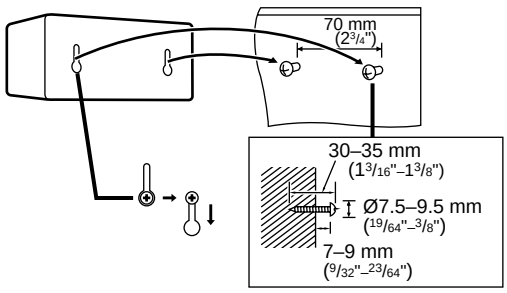
The small speakers with the long cords are surround speakers.
Place on either side of listening position, or slightly to the rear, about 1 meter higher than ear level with the Panasonic logo facing towards the listening position.
The effect varies with the type of music and music source.

#### C Attaching to a wall

Surround speakers can be attached to a wall.
Set the speaker onto screws and slide through bracket to lock into position.

**Note**

The wall or pillar on which the speakers are to be attached should be capable of supporting 5 kg (11 lb.) per screw.




### Notes on speaker use

- You can damage your speakers and shorten their useful life if you play sound at high levels over extended periods.
- Reduce the volume in the following cases to avoid damage.
  - When playing distorted sound.
  - When the speakers are receiving howling from a microphone or record player, noise from FM broadcasts, or continuous signals from an oscillator, test disc, or electronic instrument.
  - When adjusting the sound quality.
  - When turning the unit on or off.

### Positioning for best effect

How you set up your speakers can affect the bass and the sound field. Note the following points.

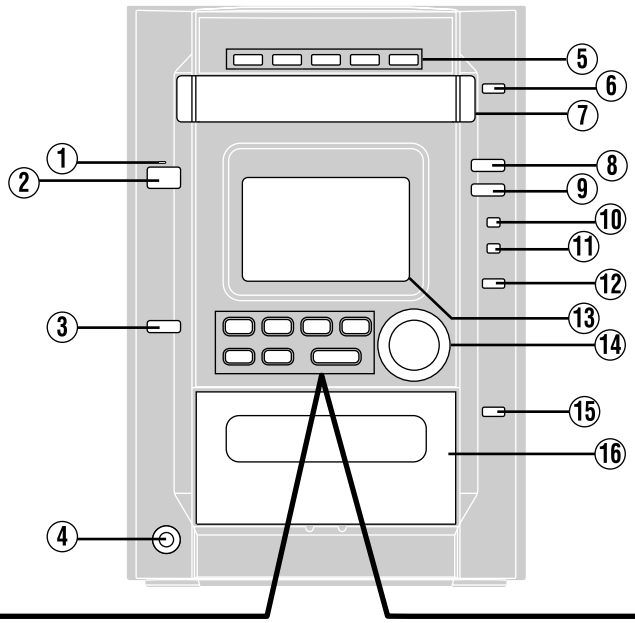
- Place speakers on flat secure bases.
- Placing speakers too close to floors, walls, and corners can result in excessive bass. Cover walls and windows with a thick curtain.
- Place the front speakers at least 5 cm from walls as they have bass reflex ports in the rear.

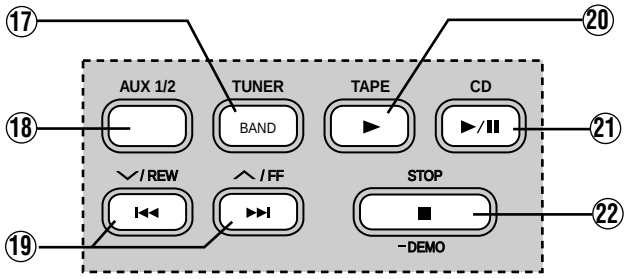
### If irregular coloring occurs on your television

These speakers are designed to be used close to a television, but the picture may be affected with some televisions and set-up combinations.

**If this occurs, turn the television off for about 30 minutes.**

The television's demagnetizing function should correct the problem. If it persists, move the speakers further away from the television.



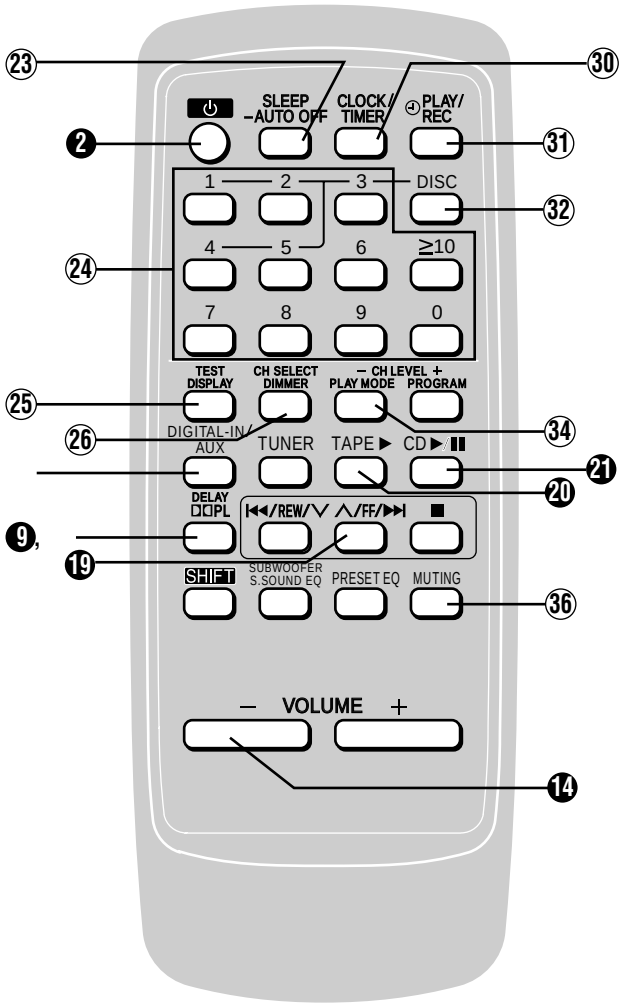

# Location of controls

| No. | Name | Ref. page |
|---|---|---|

① **AC supply indicator (AC IN)**
This indicator lights when the unit is connected to the AC power supply.

② **Standby/on switch (⏻/I, POWER)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.


③ **Record button (● REC) ..... 17**
④ **Headphone jack (PHONES) ..... 22**
⑤ **Disc direct play buttons (CD 1 ~ CD 5) ..... 9**
⑥ **Disc tray open/close button (⏏ OPEN/CLOSE) ..... 9**
⑦ **Disc tray**
⑧ **Digital input, PCM FIX mode select button and indicator (DIGITAL INPUT 1/2) ..... 20, 27**
⑨ **Dolby Pro Logic button and indicator (□□ PL) ..... 20**
⑩ **Super sound EQ button (SUPER SOUND EQ) ..... 18**
⑪ **Preset EQ select button (PRESET EQ) ..... 18**
⑫ **Subwoofer button and indicator (SUBWOOFER) ..... 18**
⑬ **Display**
⑭ **Volume control (VOL) ..... 9**
⑮ **Cassette holder open button (⏏ OPEN) ..... 15**
⑯ **Cassette holder ..... 15**
⑰ **Tuner/band select button (TUNER, BAND) ..... 13**
⑱ **AUX 1/2 button (AUX 1/2) ..... 27**
⑲ **CD skip/search, tape fast-forward/rewind, tune/preset channel select, time adjust buttons (I◀◀, ∨/REW, ▶▶I, ∧/FF) ..... 9, 13-15, 23**
⑳ **Tape play button ( ▶ TAPE) ..... 15**
㉑ **CD play/pause button (▶/ II CD ) ..... 9**
㉒ **Stop/program clear and demonstration button (■ STOP, –DEMO) ..... 9, 11, 15, 23**


SLEEP
–AUTO OFF
CLOCK/
TIMER
PLAY/
REC
1
2
3
DISC
4
5
6
≥10
7
8
9
0
TEST
DISPLAY
CH SELECT
DIMMER
– CH LEVEL +
PLAY MODE
PROGRAM
DIGITAL-IN/
AUX
TUNER
TAPE ▶
CD ▶/❚❚
DELAY
PL
I◀◀/REW/∨
∧/FF/▶▶I
■
SHIFT
SUBWOOFER
S.SOUND EQ
PRESET EQ
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– VOLUME +
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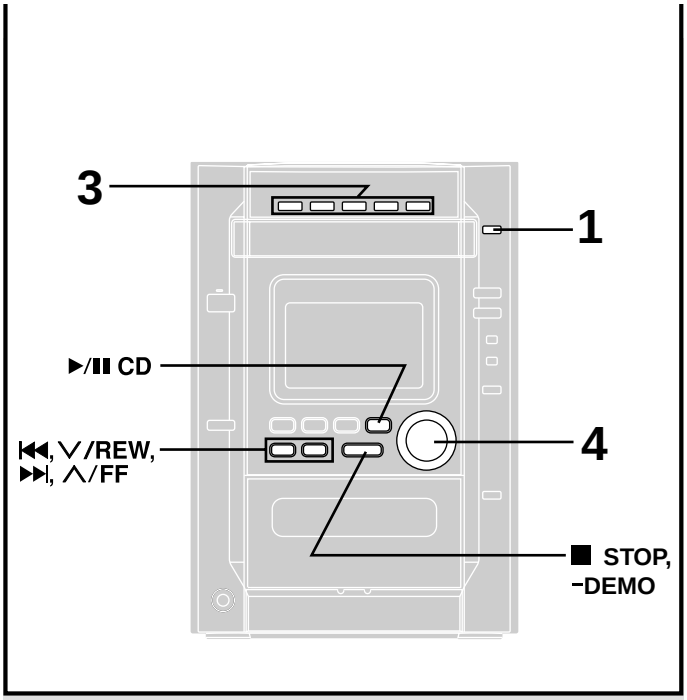
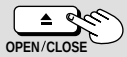
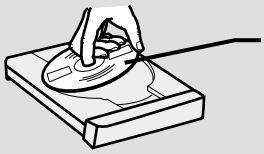


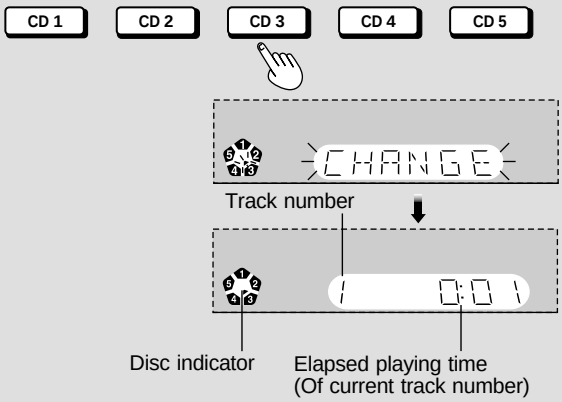

**1**



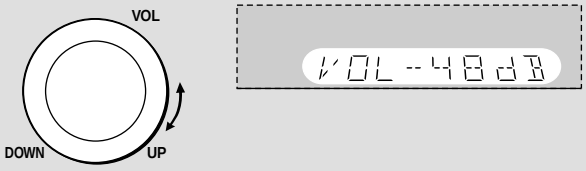

**2**



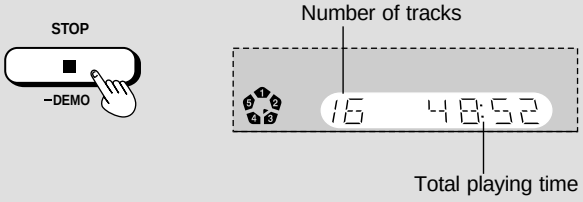

**3**



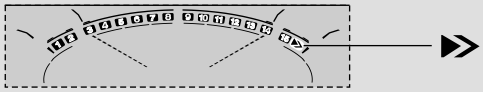

**4**




**A**




**B**




# Playing discs

This unit can play CD-DA (digital audio) format audio CD-R and CD-RW that have been finalized (a process that enables CD-R/ CD-RW players to play audio CD-R and CD-RW) upon completion of recording.
It may not be able to play some CD-R or CD-RW due to the condition of the recording.

## 1 Press [⏏ OPEN/CLOSE] button.

The unit will come on automatically and the tray opens.

## 2 Set disc in the tray.

**To continue loading CDs in the other trays**
Press another [(CD 1) ~ (CD 5)] to select the required tray and press [⏏ OPEN/CLOSE] to open the tray.
The current tray closes and the selected tray automatically opens.
**Press [⏏ OPEN/CLOSE] to close the tray.**

## 3 Press [(CD 1) ~ (CD 5)] to play your desired disc.

(If the desired CD is indicated on the display panel, the same operation can be accomplished by pressing [▶/II CD].)
The selected disc is played.
Use the CD Play Mode function's ALL-DISC mode to play CD in succession. (➡ page 12)

## 4 Adjust the volume.

**A To stop the disc play**
Press [■ STOP, –DEMO].

**B When " ▶▶ " appears on the display**
It indicates there are 16 or more tracks on the disc in the playing position.

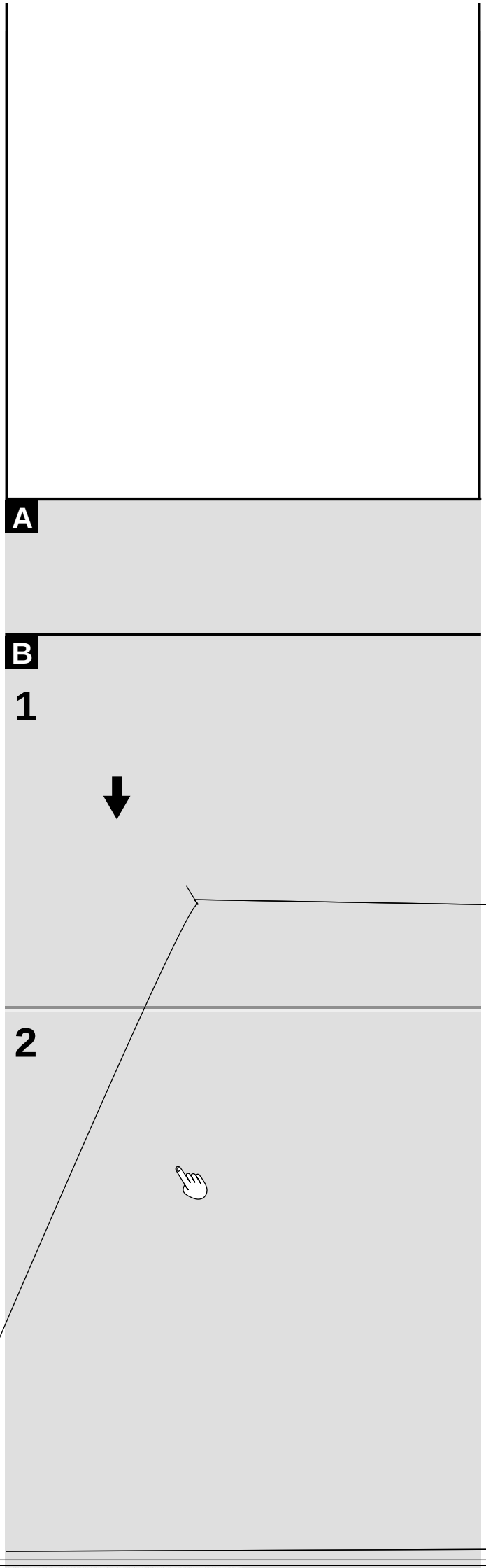
**Disc indicator**
The disc indicator on the display lights whenever the tray is in the playing position whether it is loaded or not.

**One touch play**
If the unit is in standby mode and a disc is loaded, press [▶/II CD] or [(CD 1) ~ (CD 5)].
The unit will come on automatically and play will start.

| | |
|---|---|
| **To pause** | Press [▶/II CD] during playback.<br>To resume playback, press [▶/II CD]. |
| **To search forward/ backward** | Hold down [⏮, ∨/REW] (backward) or [⏭, ∧/FF] (forward) during playback or pause mode. |
| **To skip forward/ backward** | Press [⏮, ∨/REW] (backward) or [⏭, ∧/FF] (forward) during playback or pause mode. |

**Note**

- During 1-Disc Random play or All-Disc Random play (➡ page 12), you cannot skip to tracks which have already been played.
- During program play (➡ page 11), 1-Disc Random play or All-Disc Random play, you can search forward or backward only within the current track.
- During program play, skipping is always in the programmed order, whether forward or backward.
- Always stop the changer before loading or changing discs. You cannot change discs while a disc is playing.
- Do not disconnect the AC power supply cord from the household AC outlet during disc changing operation.


A
B
1
2

## Program play

**Remote control only**

You can select up to 24 tracks to play in the order you choose.

**Preparation:** Press [ CD ▶/II ] and then [■].

### 1 Press [PROGRAM].

### 2 Press [DISC] and (within 10 seconds) [1]–[5] to select the disc.

### 3 Select the track with the numbered buttons.

To select tracks numbered 10 and over
Press [≥10] then the two digits.

Repeat steps 2 and 3 to program all tracks you want in the required order.
Step 2 is not necessary when selecting a track from the disc currently displayed.

### 4 Press [ CD ▶/II ].

All the tracks are played in the selected order.

---

**To exit program mode**
Press [PROGRAM] while stopped.
Program contents will be saved in the memory.

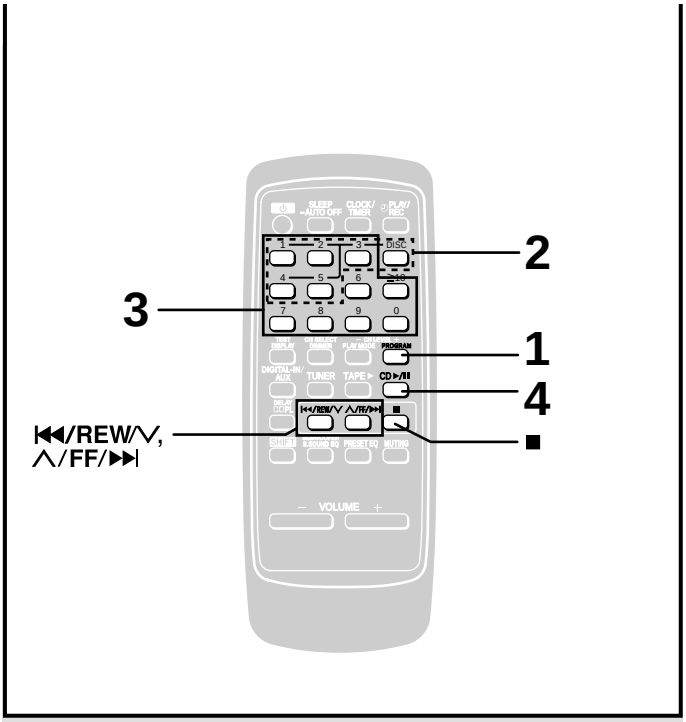
**To replay your program**
1. Press [PROGRAM].
2. Press [CD ▶/II].

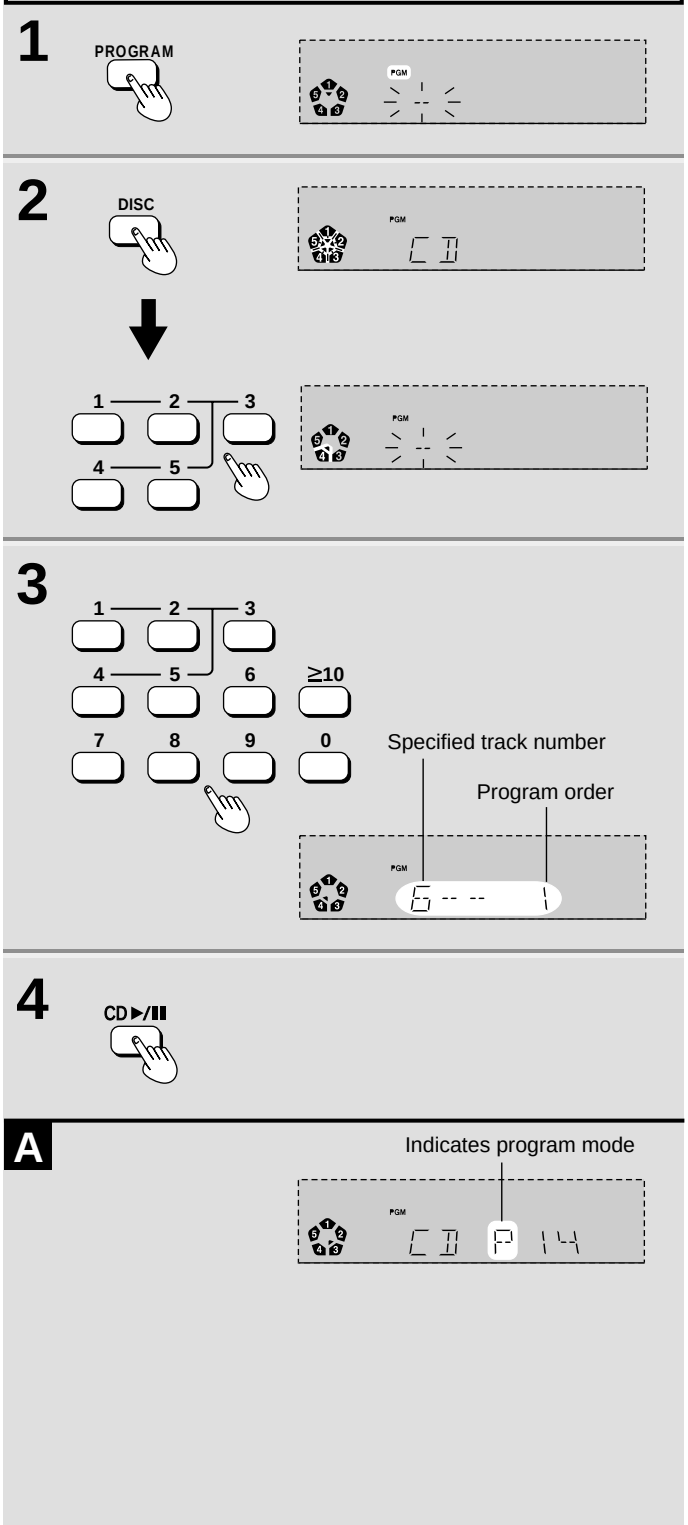
**To clear all programmed tracks**
**Press [■] in the stop mode. “CLEAR” is displayed.**

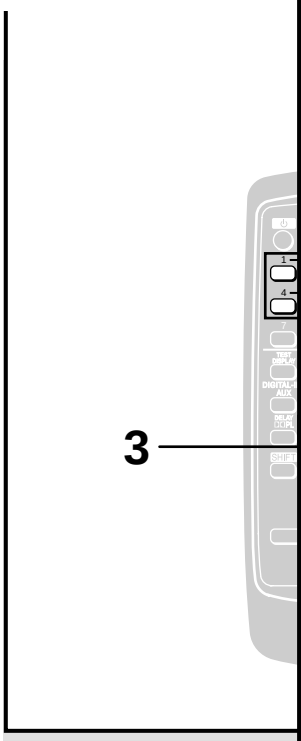
**If you program a track not on your CDs**
The track is initially programmed, but during program play, the player will skip that track and will continue playing from the next programmed item.

**You can do the following while the disc is stopped**
- **To check program contents**
  While “P” is displayed (A)
  Press [I◀◀/REW/∨] or [∧/FF/▶▶I].
  Each time you press a button, the track number and program order are displayed.
- **To add to the program**
  Repeat steps 2 and 3.

**When “CD FULL” is displayed**
24 tracks have been programmed. No further tracks can be programmed.

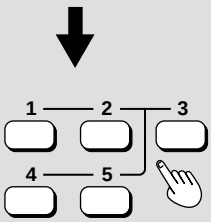





**1** PLAY MODE

**2** DISC




**3** ⏮/REW/∨ ∧/FF/⏭

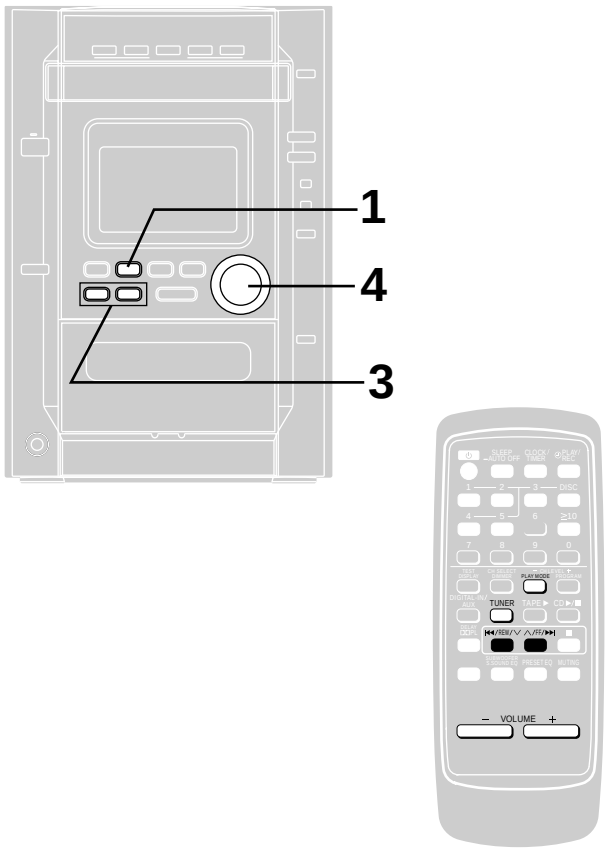
**4** CD ▶/II

**When playback ends**
The current play mode will retain in memory until it is changed even if the unit is turned off.

※ **Final disc**
For example, if play starts from disc 4, disc 3 will be the “final disc”.
**Order of progression:**
Disc 4➡5➡1➡2➡3

**Note**

You can use the CD Play Mode function together with repeat play.




**1**

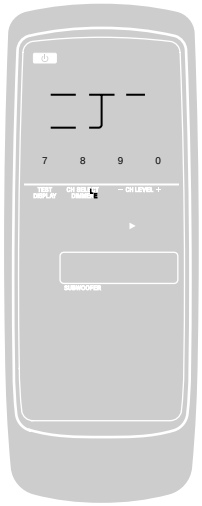
**2**

PLAY MODE

**3**

**4**

**A**




# The radio: preset tuning

**Remote control only**

There are two methods of presetting stations.
**Automatic presetting :** All the stations the tuner can receive are preset.
**Manual presetting :** You can select the stations to preset and the order they are preset in.
Up to 15 stations each can be set in the FM and AM bands.

**Preparation:**
Press [TUNER] to select “FM” or “AM”.

**Automatic presetting**

Do the following once each for FM and AM.

**Preparation:**
Tune to the frequency where presetting is to begin (➡ page 13).

## 1 Press and hold [PROGRAM].

Release the button when frequency begins to change.
The tuner presets all the stations it can receive into the channels in ascending order. When finished, the last station memorized is tuned in.

**Manual presetting**

Preset the stations one at a time.

**① Press [PROGRAM] then press [I◀◀/REW/∨] or [∧/FF/▶▶I] to tune to the required station.**
**② Press [PROGRAM] then press [I◀◀/REW/∨] or [∧/FF/▶▶I] to select a channel.**
**③ Press [PROGRAM].**

The station occupying a channel is erased if another station is preset in that channel.

**Selecting channels**

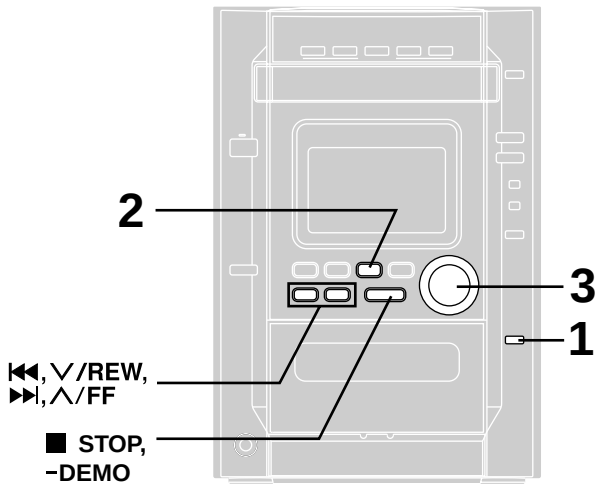
## 1 Press the numbered buttons to select the channel.

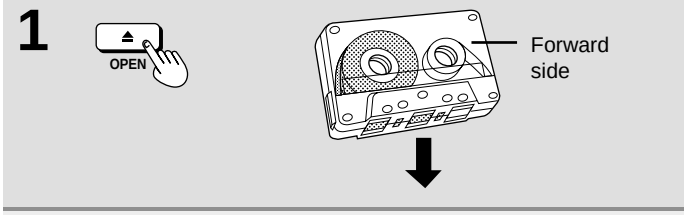
- To enter channel 10 or over
  Press [**≥10**], then the two digits.

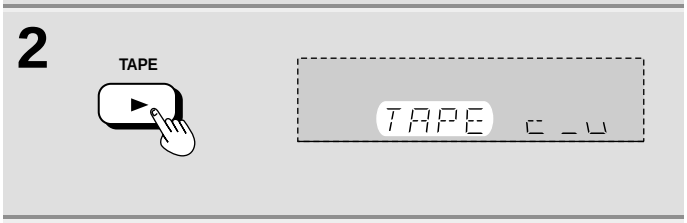
OR

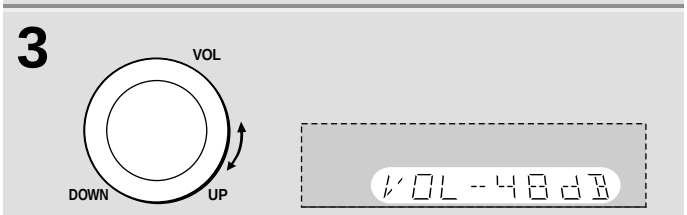
**① Press [PLAY MODE] to select “PRESET”.**
**② Press [I◀◀/REW/∨] or [∧/FF/▶▶I] to select the channel.**

## 2 Adjust the volume.



## Cassette tapes

### 1 Press [⏏ OPEN] and insert the cassette.

The unit comes on automatically.
Close the holder by hand.

### 2 Press [▶ TAPE] to start play.

### 3 Adjust the volume.

**To stop the tape**
Press [■ STOP, –DEMO].

**To play on the other side of the tape**
Turn the tape over and press [▶ TAPE].

**A To fast-forward and rewind**
Press [⏮, ∨/REW] (rewind) or [⏭, ∧/FF] (fast-forward).

**Cassette tape selection and care**

Use normal position tapes.
High position and metal position tapes can be played, but the unit will not be able to do full justice to the characteristics of these tapes.

- Tapes exceeding 100 minutes are thin and can break or get caught in the mechanism.
- Tape slack can get caught up in the mechanism and should be wound up before the tape is played.
- Endless tapes can get caught up in the deck's moving parts if used incorrectly. Always read the instructions provided with your tapes.

# Before recording

## Selection of tapes for recording

Use normal position tapes.
High position and metal position tapes can be used, but the unit will not be able to record or erase them correctly.

## A Erasure prevention

The illustration shows how to remove the tabs to prevent recording. To record on the tape again, cover as shown.

## How volume and sound quality affect recording

The tape you are recording is not affected whatsoever by changes in volume and sound quality.

## B To erase a recorded sound

① **Press [▶ TAPE ] then [■ STOP, –DEMO].**
② **Insert the cassette with the side to be erased facing towards you and the exposed tape facing down.**
③ **Press [● REC].**

## C Preparatory steps

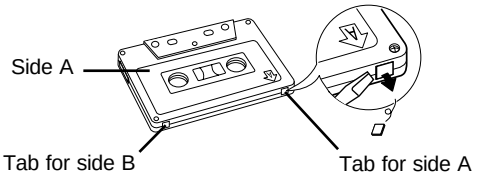
Do these steps before each recording.
Wind up the leader tape so recording can begin immediately.

### Press [⏏ OPEN] and insert the cassette to be recorded on.

Insert with the exposed tape facing down.

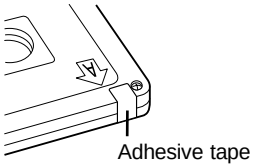
**A**

**To protect tapes against further recording**

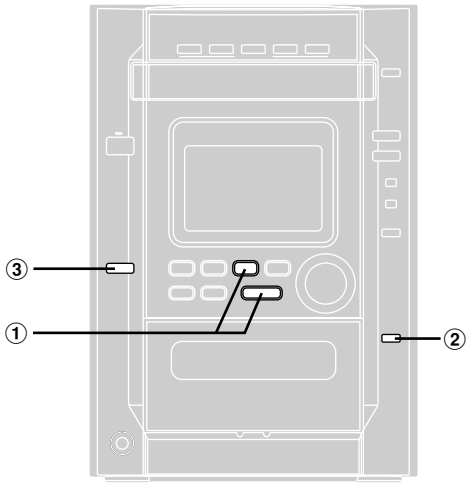


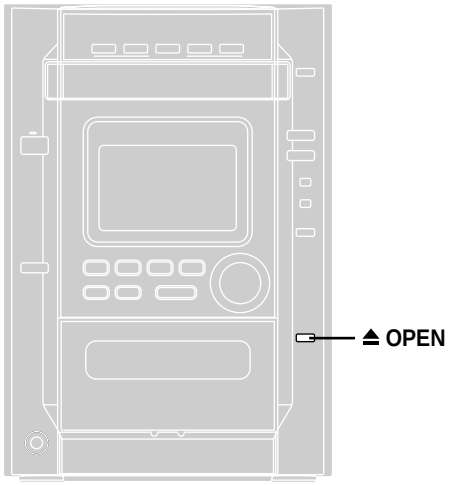

**To re-record**

Normal position tape

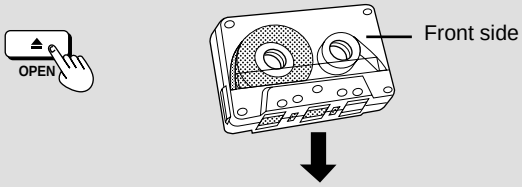


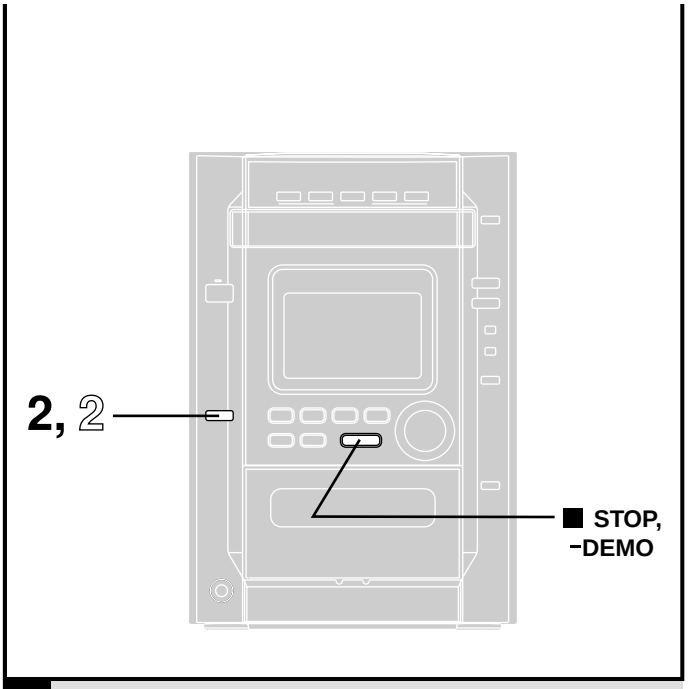

**B**

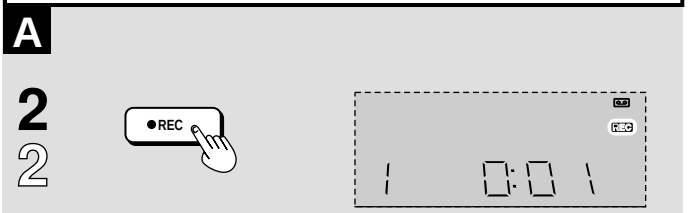


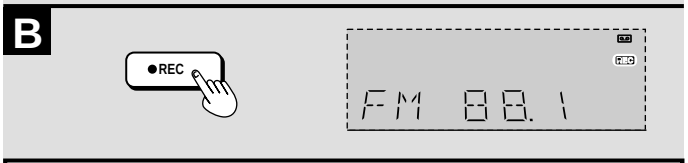



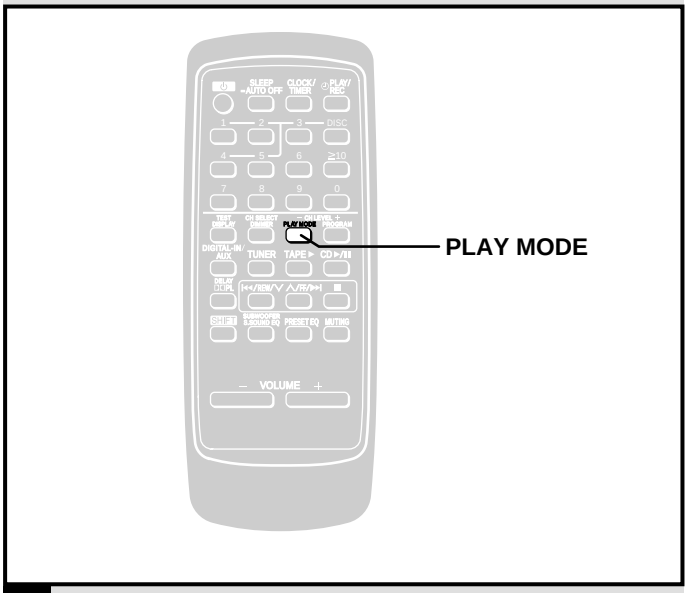

**C**

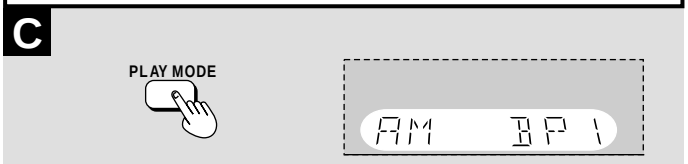





## A Recording discs

You can use 1-DISC/ALL-DISC/1-SONG mode (➡ page 12) to make recordings.

**Preparations:**
- Do the preparatory steps (➡ page 16).
- Insert the disc(s) you want to record (➡ page 9).
  Press [▶/❚❚ CD] and then [■ STOP, –DEMO].

**1-DISC/ALL-DISC recording**

**1 Do steps 1 to 2 on page 12.**
Ensure CD is stopped.

**2 Press [● REC] to start recording.**
The CD starts.

**1-SONG recording**

**1 Do steps 1 to 3 on page 12.**

**2 Press [● REC] to start recording.**
The CD starts.

**To stop recording**
Press [■ STOP, –DEMO].
Disc play stops automatically.

**If the tape finishes before the disc**
The disc continues playing. Press [■ STOP, –DEMO] to stop it.

**To record programmed tracks**
① Program the tracks (➡ page 11, steps 1–3).
② Press [● REC] to start recording.
Play starts.
To stop recording, press [■ STOP, –DEMO].
Disc play stops automatically.

## B Recording the radio

**Preparation:** Do the preparatory steps (➡ page 16).

**1 Tune to the required station.**
(➡ page 13 or 14).

**2 Press [● REC] to start recording.**

**To stop recording**
Press [■ STOP, –DEMO].

**To record on the other side of the tape**
Turn the tape over and press [● REC].

**Note**

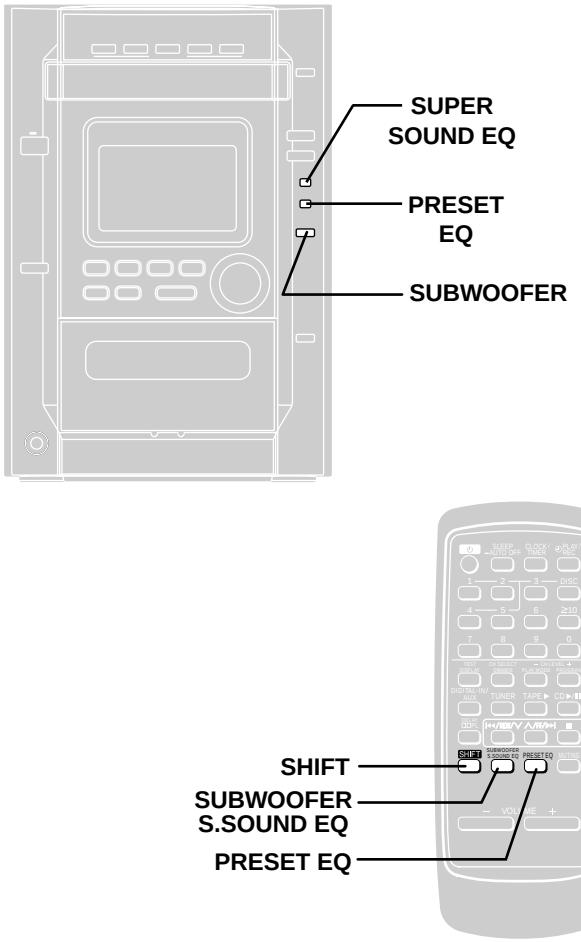
When recording an AM broadcast, sound is momentarily interrupted when you start and stop the recording.

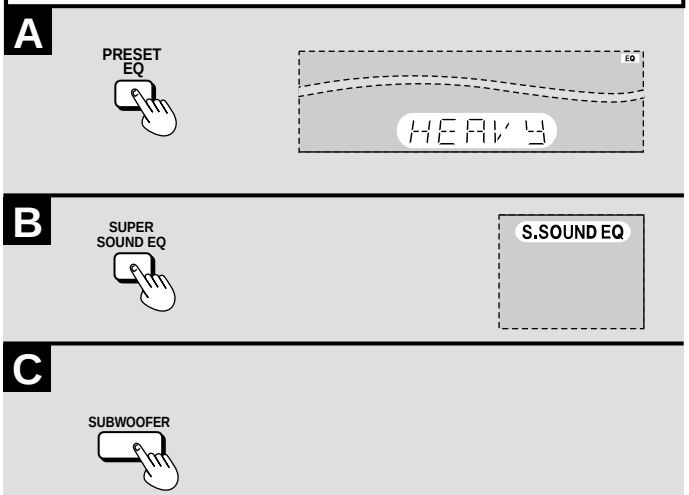
### C To reduce noise while AM recording (Beat proof function)

**Remote control only**

**Press and hold [PLAY MODE] while recording.**
Each time you press and hold the button, “BP1” and “BP2” will be displayed alternately.

Select the position where there is less noise.




## A Using the built-in sound quality settings

### Press [PRESET EQ] to select the sound quality.

Every time you press the button:

HEAVY → SOFT → CLEAR → VOCAL → EQ-OFF → HEAVY

**HEAVY** : Select this when playing rock or other kinds of music that sounds better with an added punch.
**SOFT** : Select this when listening to background music.
**CLEAR** : Select this for jazz or other kinds of music for which clarity in the treble range is desired.
**VOCAL** : Select this to add gloss to vocals.

The original display is restored on the display panel in about 4 seconds.

**Note**

- Preset EQ cannot be used together with Super Sound EQ.
- All recordings are performed at “EQ-OFF” setting even if an alternative sound quality setting has been selected.

## B Enhancing the sound quality

This feature enhances the bass and treble effect of the sound.

### Press [SUPER SOUND EQ].

Remote control : Press [S.SOUND EQ].
Press the button again to cancel.

## C Adjusting the bass

### Press [SUBWOOFER].

The button lights when the feature is on.
Remote control: Press [SHIFT] + [SUBWOOFER].

Each time you press the button:
MID (medium) → MAX (high) → Light off (off)

**To cancel**

Press [SUBWOOFER] to turn the light off.
Remote control: Press [SHIFT] + [SUBWOOFER].

**Note**

You cannot use this function when headphones are connected.

# Enjoying surround sound

The following chart gives a summary of this unit's surround features.

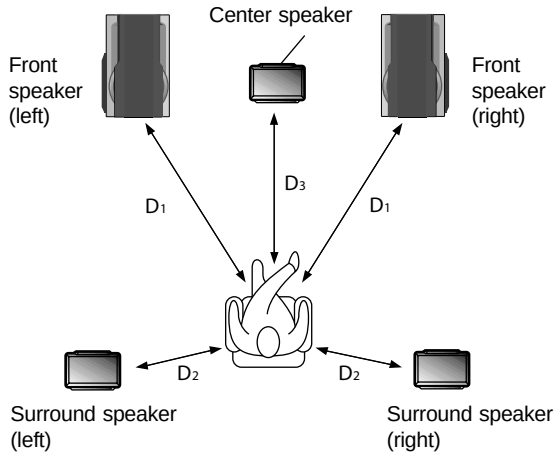
**Note**

- All the features are only effective if speakers are used. No discernible effect will be heard through headphones.
- None of the features are effective when radio is selected as the source.
- You may experience a reduction in sound quality when these surround systems are used with some sources. If this occurs, turn the surround system off.

| Surround system | Features | Software |
|---|---|---|
| **DOLBY DIGITAL** (➡ page 20) | • Dolby Digital is a discrete 5.1 (6) channel surround system developed for cinema use. The sound signals in Dolby Digital format are compressed to 1/10 their original size, allowing an entire movie to be recorded on a single DVD.<br>• This unit automatically recognizes DVDs that have been recorded with Dolby Digital.<br>• Not all Dolby Digital sources are recorded with 5.1 (6) channels. Some sources marked Dolby Digital may be recorded in Dolby Surround, a 2 channel system. | Software encoded with Dolby Digital can be identified with this mark.<br>DOLBY DIGITAL<br>• DVD |
| **DOLBY PRO LOGIC** (➡ page 20) | Dolby Pro Logic is a decoding system that was developed to get a better sense of presence from sources encoded with Dolby Surround. The balance of sound has been improved by the addition of a separate center speaker channel. | Software encoded with Dolby Surround can be identified with this mark.<br>DOLBY SURROUND<br>• DVD<br>• Video CD, CD<br>• Laser Disc<br>• Video tape |

Manufactured under license from Dolby Laboratories.
"Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

## To calculate the delay time




$D_1$: Distance from front speakers
$D_2$: Distance from surround speakers
$D_3$: Distance from center speaker

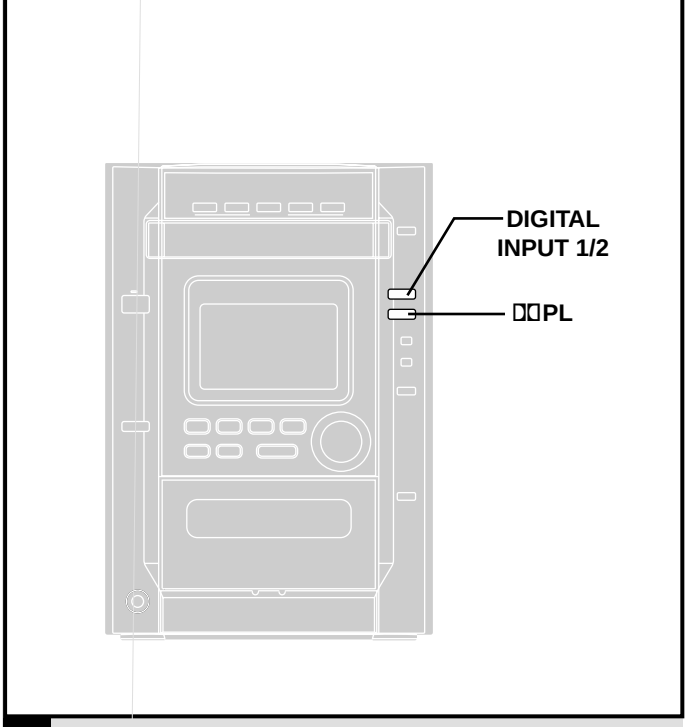
**Setting the center channel delay time (Dolby Digital only):**

| | |
|---|---|
| If $D_1$ is equal to or less than $D_3$ | Set to 0 ms. |
| If $D_3$ is less than $D_1$ | Increase 1 ms for every 30 cm (1 foot) of difference between $D_1$ and $D_3$. |

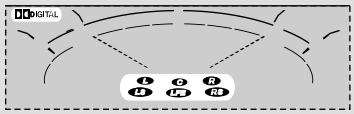
**Setting the surround channel delay time:**

| | |
|---|---|
| If $D_1$ is equal to or less than $D_2$ | For Dolby Digital: Set to 0 ms.<br>For Dolby Pro Logic: Set to 15 ms. |
| If $D_2$ is less than $D_1$ | Start at 0 ms for Dolby Digital or 15 ms for Dolby Pro Logic, and increase by 5 ms for every 1.5 m (5 feet) of difference between $D_1$ and $D_2$. |

➡ Refer page 21 for operation.

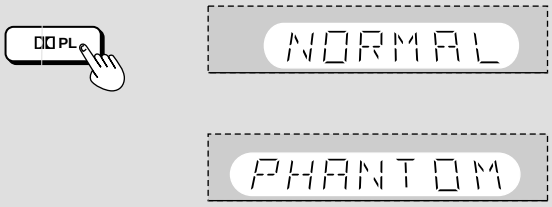



A

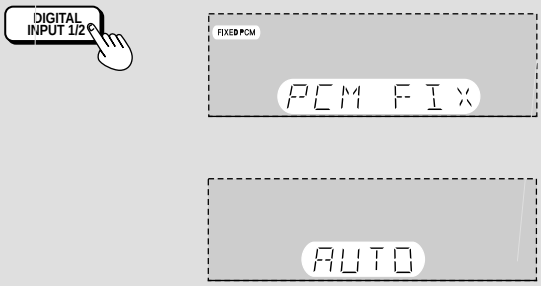


B

1




C




## Enjoying surround sound

### A DOLBY DIGITAL

**Preparation:** Do step 1 on page 27, **A**.

**Play a DOLBY DIGITAL source from the external unit.**

"PL DIGITAL" is displayed.

### B DOLBY PRO LOGIC

**1 Press [PL] to select "NORMAL" OR "PHANTOM".**

Every time you press the button:

NORMAL → PHANTOM
↑ Light off (off) ← |

NORMAL: To output at the front, surround and center speakers

PHANTOM: To output at the front and surround speakers (sound which would have been sent to the center speaker will be divided equally between both the left and right front speakers.)

**2 Playback a Dolby Surround source.**

---

**The program format indicators (L, C, R, LS, S, LFE, RS)**

These light up to indicate the channels contained in the digital input signal. They do not light when input is analog.

**L:** Front left
**C:** Center
**R:** Front right
**RS:** Right surround
**LS:** Left surround
**S**: If the surround channel is monaural
**LFE** (Low Frequency Effect): Deep-bass effect

### C Changing the recognition mode

In rare cases, the unit may have trouble recognizing the digital signals on the discs. With the PCM signals on CDs, this may cause the beginning of a track to be cut off. Engage the PCM FIX mode if this occurs.

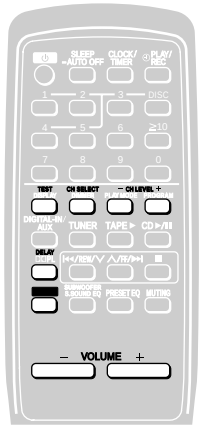
This mode does not need to be changed under normal circumstances. Change it only if the unit appears to be having trouble recognizing the software you are playing.

While the input source is selected and digital input is engaged:

**Press and hold [DIGITAL INPUT 1/2].**

Every time you press and hold the button:
PCM FIX ↔ AUTO

When PCM FIX mode is on, the unit cannot process other signals. This may cause noise to be output. Select "AUTO" if this occurs.
The selected mode is stored even if the unit is turned off.




# Enjoying surround sound

**Preparation**

**DOLBY DIGITAL:** Press [DIGITAL INPUT 1/2] to select the input source.

**DOLBY PRO LOGIC:** Press [ PL] to select “NORMAL” or “PHANTOM”.

## Speaker level adjustments

### Remote control only

If the level of the speakers appears to be different while listening to a source, adjust the level of the speakers to the same apparent level.

① **Press [SHIFT] + [TEST] to output a test signal.**

L: Front left
C: Center
R: Front right
RS: Right surround
LS: Left surround
SW: Subwoofer

**When DOLBY PRO LOGIC is on**

- The surround channel for Dolby Pro Logic is monaural so the indicator appears as “S” instead.
- In the PHANTOM mode, the center speaker is OFF, so there is no center test signal and “C” is not displayed.

② **Press [SHIFT] + [CH LEVEL (+, –)].**

To stop the test signal, press [SHIFT] + [TEST] again.

### To select a specific speaker

❶ **Press [SHIFT] + [CH SELECT] to select the speaker.**

For Dolby Digital:

Every time you press the buttons:

L → C → R → RS → LS → SW

↑ ↵

For Dolby Pro Logic:

Every time you press the buttons:

L → C (for NORMAL mode only) → R → S

↑

The current channel level is displayed.

❷ **Press [SHIFT] + [CH LEVEL (+, –)].**

Repeat steps ❶ and ❷ to adjust the level accordingly.

## Delay time adjustments

### Remote control only

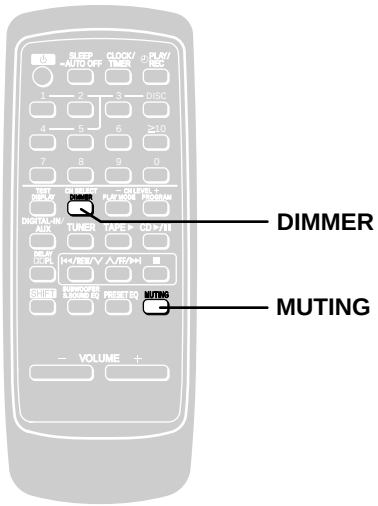
By adjusting the delay time, the difference in the distance from the viewing and listening position to the front speakers and the distance to the center speaker and surround speakers can be offset and made equal. This achieves better sound localization and makes a more life-like reproduction of the sound field possible.

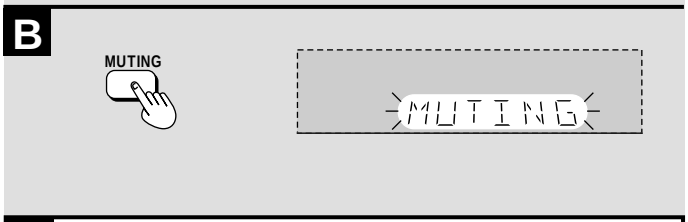
1. **Press [SHIFT] + [DELAY] to select the channel to be adjusted.**
   The current delay time is displayed.
   Press again to change the speaker channel;
   C (Center speaker) ↔ S (Surround speakers)

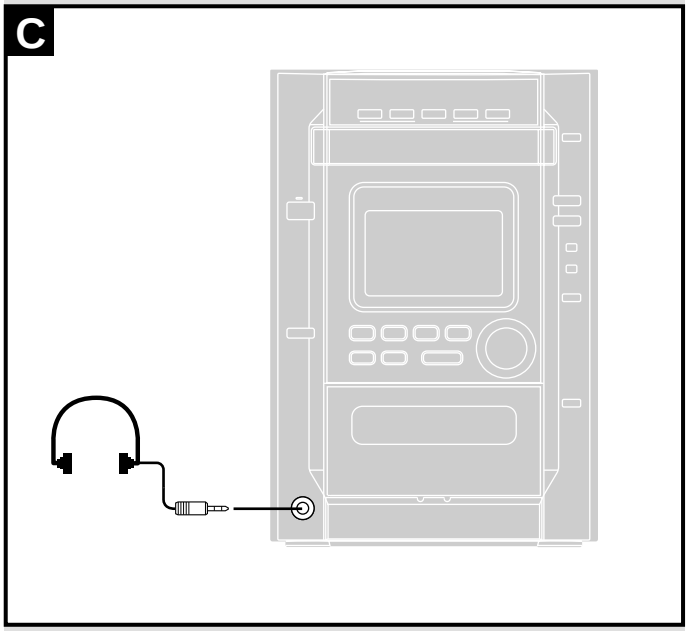
2. **Press [SHIFT] + [CH LEVEL (+, –)] to set the delay time.**
   The delay time changes with each press.
   The increments depend on the channel being adjusted.

| Surround mode | Speaker | Available delay time setting (ms) |
|---|---|---|
| Dolby Digital | Center | 0, 1, 2, 3, 4, 5 |
| | Surround | 0, 5, 10, 15 |
| Dolby Pro Logic | Surround | 15, 20, 25, 30 |

➡ see page 19 for information about delay time.






# Convenient functions

## A Dimming the display

**Remote control only**

The display is dimmed and all indicators, except for the [AC IN] indicator, are turned off for better television viewing.

### Press [DIMMER].

To cancel, press [DIMMER] again.

## B Muting the volume

**Remote control only**

### Press [MUTING].

Volume is reduced to minimum.

---

**To cancel**

Press [MUTING] again.
"MUTING" goes out.
To cancel from the unit, turn [VOL] to minimum (–– dB), then raise it to the required level.
Muting is also canceled when the unit is turned off.

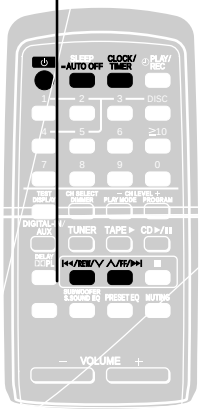
## C Using headphones (not included)

### Reduce the volume before connection.

Avoid listening for prolonged periods of time to prevent hearing damage.
Plug type: 3.5 mm ($^1/_8$ in.) stereo

Audio is automatically switched to stereo (2 channel).

A


SLEEP/
-AUTO OFF
CLOCK/
TIMER
PLAY/
REC
DISC
TUNER
TAPE
CD
VOLUME

B

1.

2

3

4

# Using the timers

## Using the play/record timer

**Remote control only**

The timer has two functions. It can be set to on at a certain time to wake you up, or it can be set to record the radio.
The play timer cannot be used in combination with the record timer.

**Preparations:**
- Turn the unit on and set the clock (➡ page 23).
- **For the play timer**, prepare the music source you want to listen to; tape, CD or radio, and set the volume.
- **For the record timer**, check the cassette's erasure prevention tabs (➡ page 16: A), insert the cassette and tune to the radio station (➡ page 13).

### 1 Press [CLOCK/TIMER] to select the timer function.

Every time you press the button:

CLOCK → ◴PLAY → ◴REC
↑— Previous display ←

◴PLAY : to set the play timer
◴REC : to set the record timer

### 2 ON time setting

① **(Within 8 seconds or so)**
**Press [I◀◀/REW/∨] or [∧/FF/▶▶I] to select the starting time.**
② **Press [CLOCK/TIMER].**

### 3 OFF time setting

① **Press [I◀◀/REW/∨] or [∧/FF/▶▶I] to select the finishing time.**
② **Press [CLOCK/TIMER].**

**The start and finish times are now set.**

### 4 Press [◴PLAY/REC] to display the timer indicator.

Every time you press the button:

◴PLAY → ◴REC
↑—(Off)←

◴PLAY : to turn the play timer on
◴REC : to turn the record timer on
(The indicator doesn't appear if the start and finish times or the clock hasn't been set.)

### 5 Press [⏻] to turn the unit off.

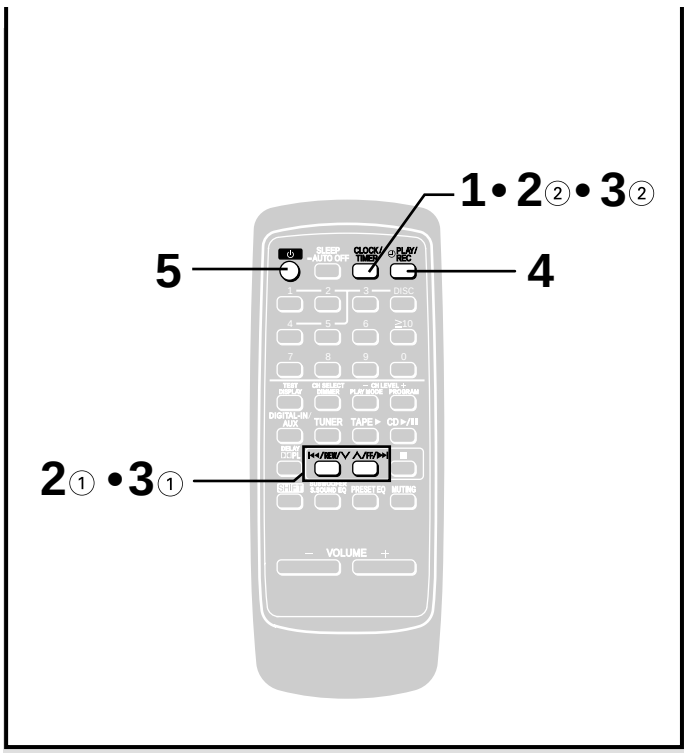
**The unit must be off for the timers to operate.**
- **For play timer**
  The timer play will start at the preset time with volume increasing gradually up to the volume level you pre-set.
- **For record timer**
  The record timer comes on about 30 seconds before the set time with the volume muted.

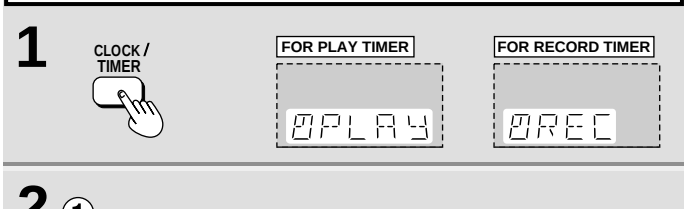
---

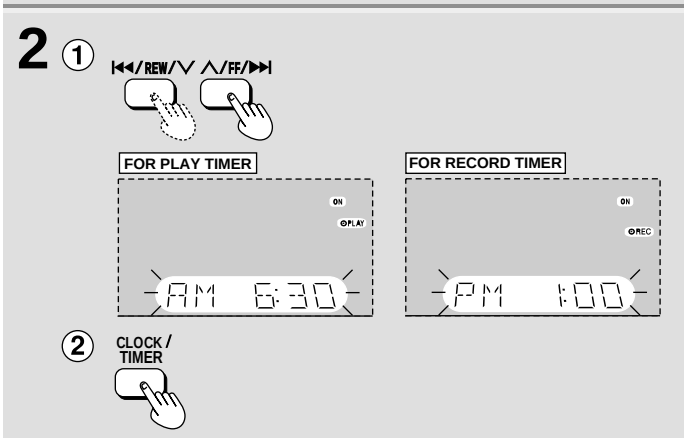
**To cancel the timer**
Press [◴PLAY/REC] to clear the timer indicators from the display.
(The timer comes on at the set time everyday if the timer is on.)

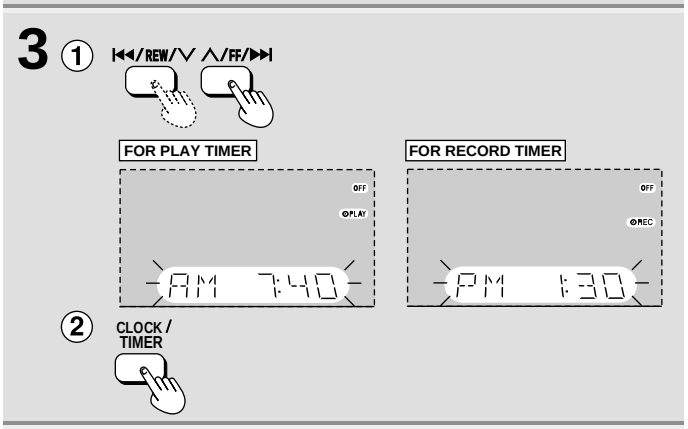
**To change the settings (when unit is on)**
- **To change the play/record times**
  Do steps 1, 2, 3 and 5.
- **To change the source or volume**
  1. Press [◴PLAY/REC] to clear the timer indicator from the display.
  2. Make changes to the source or volume.
  3. Do steps 4 to 5.

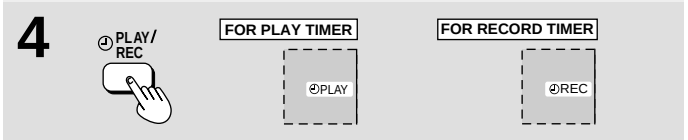
**(Continued on next page)**

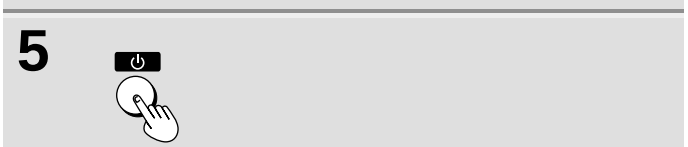


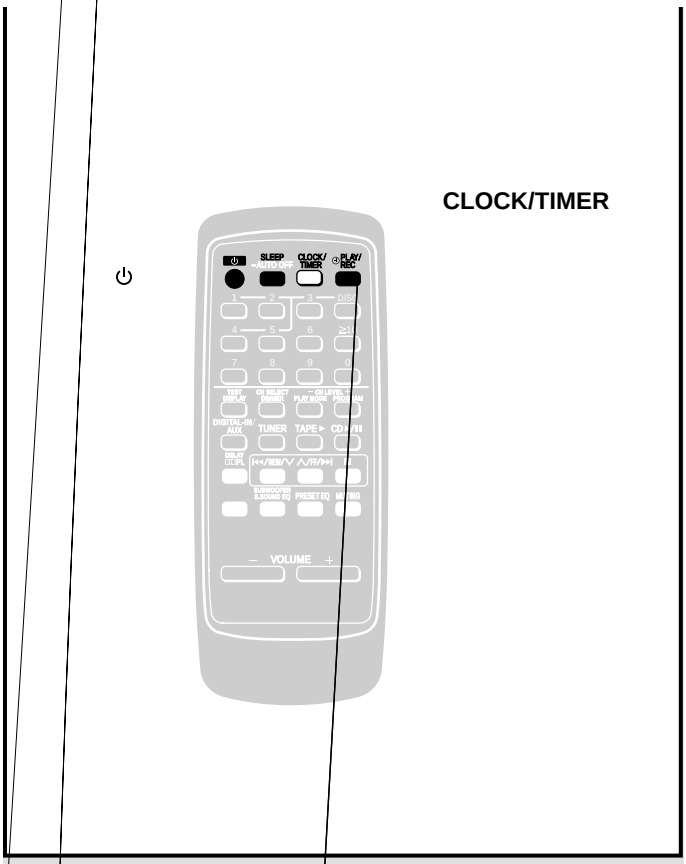






# Using the timers

## Using the play/record timer

**To change the timer**

Press [PLAY/REC] to select the desired timer.

Every time the button is pressed the setting changes as follows.

PLAY → REC → (Off) → PLAY

**To check settings**

While the unit is on and the "PLAY" (or "REC") indicator is on, press [CLOCK/TIMER] so "PLAY" (or "REC") appears on the display.

Two seconds after "PLAY" (or "REC") appear, the settings are displayed in the following order:

- For play timer
  1. Play start time
  2. Play finish time
  3. Play source
  4. Playback volume
- For record timer
  1. Recording start time
  2. Recording finish time
  3. Recording source

You can check the settings even when the system is OFF by pressing [CLOCK/TIMER] twice.

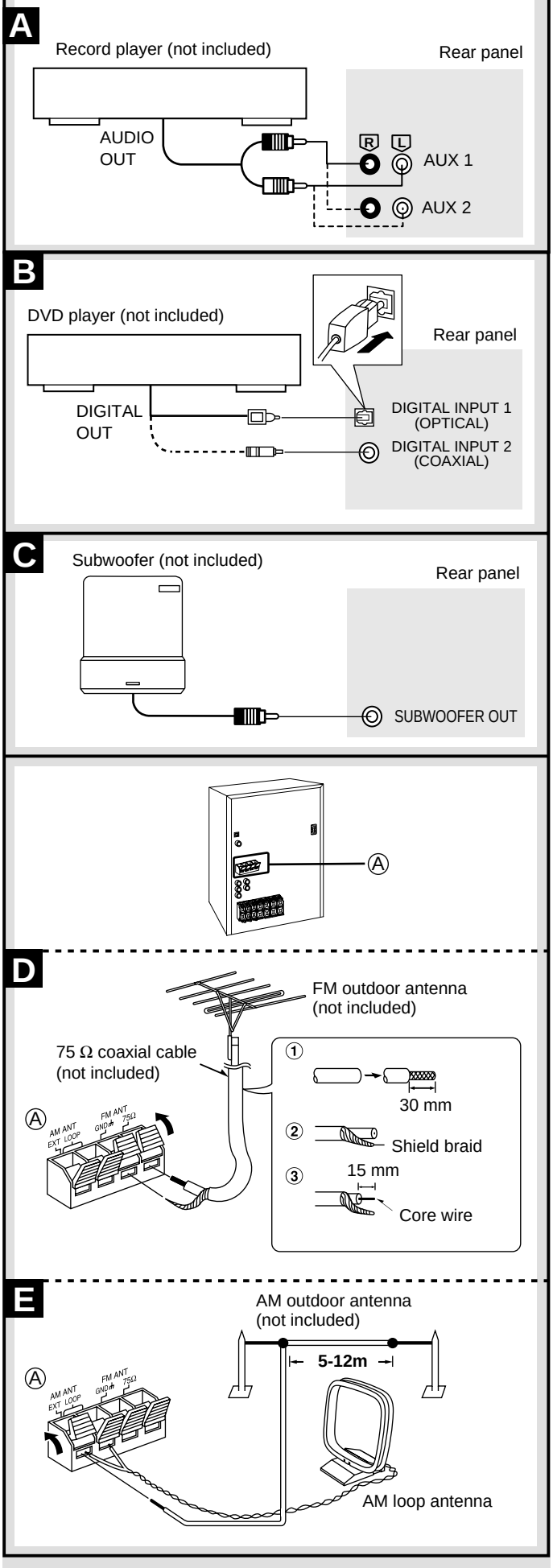
**To enjoy the desired source after the timer setting is completed**

The volume level (for play timer) and music source are stored in the timer memory and the timer will start in these preset conditions. However, the Disc numbers do not get stored in the timer memory.

1. After step 4, start playing the desired source.
2. Reset the Disc numbers if you have changed any of them, confirm that a Disc or cassette is inserted, then press [⏻] to put the unit on standby.

**Note**

- If you switch the system to the standby mode while the play/record timer is functioning, the OFF time setting will not be activated.
- If AUX or DIGITAL input is selected as the source, when the timer comes on, the system turns on and engages AUX or DIGITAL input as the source. If you want to playback or record from a connected unit, set the other unit's timer to the same time. (See the other unit's instruction manual.)




# Using other equipment

## Connecting other equipment

- Turn the unit off before making connections.
- Refer to the manual of the other unit for details. (Cables and equipment not included.)

### A Record player

Sound cannot be produced unless a phono equalizer (not included) is connected.
A record player with a built-in phono equalizer is recommended.

**Stereo connection cable (not included)**

White **(L)**
Red **(R)**

### B DVD player (with 5.1ch output), etc.

You can enjoy surround sound of DVDs encoded with Dolby Digital.

**Optical fiber cable (not included)**

- Do not bend the optical fiber cable.

**Coaxial cable (not included)**

### C Subwoofer

The included front speakers have subwoofers, but by connecting an active subwoofer, you can enhance the bass effect found on DVDs encoded with Dolby Digital.

## Optional antenna connections

Use outdoor antennas if radio reception is poor.

**D FM outdoor antenna**

- Disconnect the FM indoor antenna.
- The antenna should be installed by a competent technician.

**E AM outdoor antenna**

Run a piece of vinyl wire horizontally across a window or other convenient location.
Leave the loop antenna connected.

**Note**

Disconnect the antenna when the unit is not in use.
Do not use the antenna during an electrical storm.

# Troubleshooting guide

**Before requesting service, make the below checks. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem:**
***In the U.S.A., contact the Panasonic Customer Call Center at 1-800-211-7262, or e-mail consumerproducts@panasonic.com, or web site (http://www.panasonic.com).***
***In Canada, contact Panasonic Canada Inc. Customer Care Centre at 905-624-5505, web site (www.panasonic.ca), or an authorized Servicentre closest to you.***

**Reference pages are shown as black circled numbers ❻.**

### Common Problems

| | |
|---|---|
| **No sound.** | Turn the volume up.<br>Check the speaker connections. ❻<br>Change the AUX or DIGITAL input setting to suit the type of connection you have made. ㉗<br>Check that the digital signals can be decoded by this unit.<br>Turn PCM FIX off. ⑳ |
| **Sound stops.** | Switch off the unit, determine and correct the cause of the problem, then switch the unit on. Causes include shorting of the positive and negative speaker wires, straining of the speakers through excessive volume or power, and using the unit in a hot environment. |
| **Sound is unfixed, reversed or comes from one speaker only.** | Check the speaker connections. ❻ |
| **Humming heard during play.** | An AC power supply cord or fluorescent light is near the cables. Keep other appliances and cords away from this unit's cables. |
| **"ERROR" is displayed.** | Incorrect operation performed. Read the instructions and try again. |
| **"– –:– –" appears on the display at standby mode.** | You plugged the AC power supply cord in for the first time or there was a power failure recently. Set the time. ㉓ |
| **"F61" is displayed.** | Check and correct the speaker cords connection. ❻<br>If this does not fix the problem, there is a power supply problem. Consult the dealer. |

### Listening to the radio

| | |
|---|---|
| **Noise is heard.**<br>**The stereo indicator flickers or doesn't light.**<br>**Sound is distorted.** | Use an outdoor antenna. ㉖ |
| **A beat sound is heard.** | Turn the TV off or separate it from the unit. |
| **A low hum is heard during AM broadcasts.** | Separate the antenna from other cables and cords. |

### When there is a television set nearby

| | |
|---|---|
| **The picture on the TV disappears or stripes appear on the screen.** | The location and orientation of the antenna are incorrect. If you are using an indoor antenna, change to an outdoor antenna.<br>The TV antenna wire is too close to the unit. Separate the antenna wire of the TV set from the unit. |

### Using the cassette deck

| | |
|---|---|
| **Poor quality sound.** | Clean the heads. ㉛ |
| **Recording is not possible.** | If the erasure prevention tabs have been removed, cover the holes with adhesive tape. ⑯ |

### Playing discs

| | |
|---|---|
| **The display is wrong or play won't start.** | The disc may be upside down. ❾<br>Wipe the disc.<br>Replace the disc if it is scratched, warped, or non-standard.<br>Condensation may have formed inside the unit due to a sudden change in temperature. Wait about an hour for it to clear and try again. |
| **The total number of tracks displayed differs each time the same disc is inserted.**<br>**Unusual sound is heard.** | The disc may be scratched, or its data may be defective. Replace the disc. |
| **CD-RW cannot be read.** | The disc was incompletely formatted. Use the recording equipment to fully format the disc before recording. |
| **"TAKE OUT/DISC" appears on the display.** | There is a problem with the disc mechanism. (A power failure may have occurred.)<br>The tray will open automatically. Remove the disc from the tray, and after ensuring there is no disc in the tray, close it. The unit will make the disc changing noises for a few moments and then it should operate normally. |
| **The changer cannot change to the selected disc or play won't start.** | Press [PLAY MODE] on the remote control to clear 1-SONG mode and try again. |

### The remote control

| | |
|---|---|
| **The remote control doesn't work.** | Check that the batteries are inserted correctly. ❽<br>Replace the batteries if they are worn. |

Pr
Cus
00-

# Warranty (ONLY FOR U.S.A.)

**Panasonic Consumer Electronics Company,**
**Division of Matsushita Electric Corporation of America**
One Panasonic Way Secaucus, New Jersey 07094

**Panasonic Sales Company, Division of Matsushita Electric of Puerto Rico, Inc.**
Ave. 65 de Infantería, Km. 9.5
San Gabriel Industrial Park, Carolina, Puerto Rico 00985

## Panasonic/Technics Audio Products Limited Warranty

Panasonic Consumer Electronics Company or Panasonic Sales Company (collectively referred to as "the Warrantor") will repair or replace this product with new or refurbished parts or equivalent product, free of charge in the U.S.A. or Puerto Rico, in the event of a defect in materials or workmanship as follows (all time periods commence from the date of original purchase):

AUDIO PRODUCTS—labor and parts for one (1) year.
ALL AUDIO RACKS (cabinets)—parts only 30 days.
TECHNICS STAND ALONE SPEAKERS, SUBWOOFER SPEAKERS—labor and parts for three (3) years.
USB READER-WRITER, PERSONAL COMPUTER CARD ADAPTERS—(when applicable)—exchange defective unit with a new or refurbished one for one (1) year.
ACCESSORIES—HEADPHONES, CARTRIDGES, MICROPHONES, ADAPTERS—labor and parts for ninety (90) days.

RECHARGEABLE BATTERIES—(when applicable)—exchange defective item for new one for ten (10) days. Non-rechargeable batteries are not warranted.

SD MEMORY CARDS, RECHARGEABLE BATTERY PACKS—(when applicable)—exchange defective item for new one for ninety (90) days. Non-rechargeable battery packs are not warranted.

Carry-in or mail-in service in the U.S.A. can be obtained during the warranty period by contacting a Panasonic Services Company (PASC) Factory Servicenter listed in the Servicenter Directory. Or call toll free, 1-800-211-7262 to locate a PASC authorized Servicenter. Carry-in or mail-in service in Puerto Rico can be obtained during the warranty period by calling the Panasonic Sales Company telephone number listed in the Servicenter Directory.

This warranty is extended only to the original purchaser. A purchase receipt or other proof of date of original purchase will be required before warranty service is rendered.

This warranty only covers failures due to defects in materials and workmanship which occur during normal use and does not cover normal wear to the stylus (when applicable) or a dealer installed cartridge or stylus. The warranty does not cover damages which occur in shipment or failures which are caused by products not supplied by the warrantor, or failures which result from accident, misuse, abuse, neglect, mishandling, faulty installation, misapplication, set-up adjustments, maladjustment of consumer controls, improper operation or maintenance, improper antenna, inadequate signal reception or pick-up, alteration, modification, power line surge, improper voltage supply, lightning damage, commercial use, such as; hotel, office, restaurant, or other business or rental use of the product, or service by anyone other than a PASC Factory Servicenter or a PASC authorized Servicenter, or damage that is attributable to acts of God.

LIMITS AND EXCLUSIONS

There are no express warranties except as listed above.

THE WARRANTOR SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT, OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING WITHOUT LIMITATION, DAMAGE TO TAPES, RECORDS OR DISCS. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

If a problem with this product develops during or after the warranty period, you may contact your dealer or Servicenter. If the problem is not handled to your satisfaction, then write to the Consumer Affairs Department at the company address indicated above.

If you ship the product
Carefully pack and send it prepaid, adequately insured and preferably in the original carton.
Attach a postage-affixed letter, detailing the complaint, to the outside of the carton.
*Do NOT send the product to the Executive or Regional Sales offices. They are NOT equipped to make repairs.*

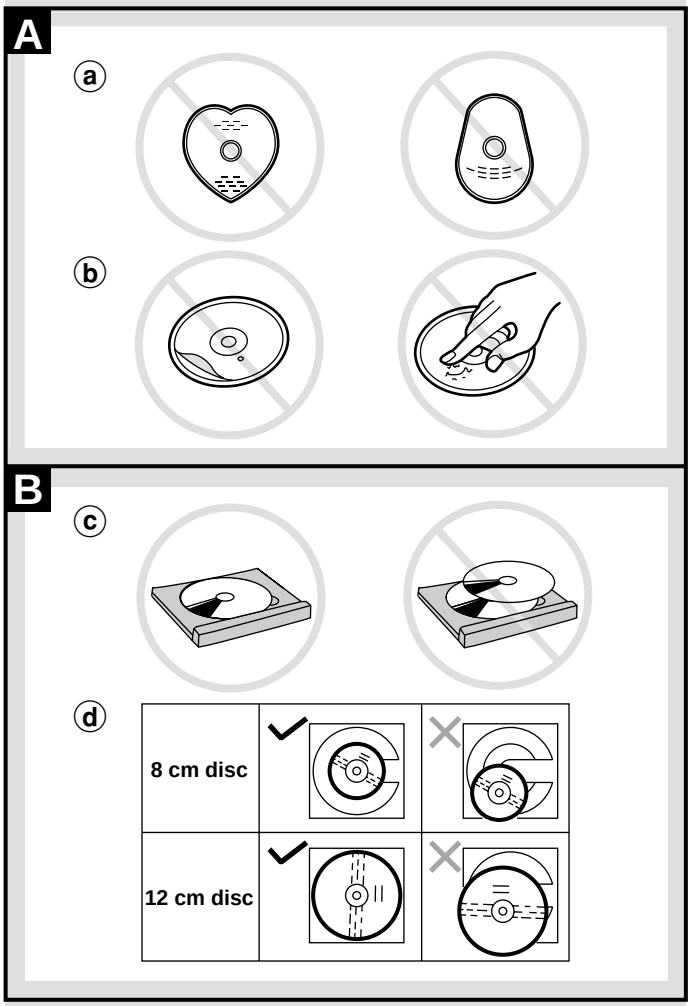
# Product Service

1. **Damage requiring service** —The unit should be serviced by qualified service personnel if:
   (a) The AC power supply cord or AC adaptor has been damaged; or
   (b) Objects or liquids have gotten into the unit; or
   (c) The unit has been exposed to rain; or
   (d) The unit does not operate normally or exhibits a marked change in performance; or
   (e) The unit has been dropped or the cabinet damaged.
2. **Servicing** —Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.
3. **Replacement parts** —When parts need replacing ensure the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock, or other hazards.
4. **Safety check** —After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

**Product information**

For product information or assistance with product operation:
***In the U.S.A., contact the Panasonic Customer Call Center at 1-800-211-7262, or e-mail consumerproducts@panasonic.com, or web site (http://www.panasonic.com).***

***In Canada, contact Panasonic Canada Inc. Customer Care Centre at 905-624-5505, web site (www.panasonic.ca), or an authorized Servicentre closest to you.***




# About discs

## A Disc selection

Choose discs with this mark:

**Do not;**
- use irregularly shaped discs (ⓐ).
- attach extra labels and stickers.
- use discs with labels and stickers that are coming off or with adhesive exuding from under labels and stickers (ⓑ).
- attach scratch-proof covers or any other kind of accessory.
- write anything on the disc.
- clean discs with liquids. (Wipe with a soft, dry cloth.)
- use discs printed with label printers available on the market.

## B To prevent damage

Always observe the following points.
- Load only 1 disc per tray (ⓒ).
- Load discs as shown in figure ⓓ.
  An adaptor is not needed with 8 cm discs (singles).
- Set the system on a flat, level surface.
- Always unload all discs before moving the unit.

**Do not;**
- set the unit on top of magazines, inclined surfaces, etc.
- move the unit while a tray is opening/closing, or when loaded.
- put anything except discs in trays.
- use cleaning discs or discs which are badly warped or cracked.

# Maintenance

## If the surfaces are dirty

**To clean this unit, wipe with a soft, dry cloth.**

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using a chemically treated cloth, read the instructions that came with the cloth carefully.

## For a cleaner, crisper sound

Clean the heads regularly to assure good quality playback and recording.
Use a cleaning tape (not included).

# Specifications

## AMPLIFIER SECTION

**Power output**
**10% THD, both channels driven**
**75 Hz**
**SUBWOOFER** 78 W
(Total effective impedance: 4 Ω)
**1 kHz**
**FRONT** 48 W per ch (6 Ω)
**CENTER** 54 W (8 Ω)
**SURROUND** 46 W per ch (8 Ω)
**Total power in stereo mode**
(FRONT and SUBWOOFER) 174 W
**Total power in DOLBY DIGITAL mode**
320 W
**Power output**
**10% THD, both channels driven**
**55 Hz–100 Hz**
**SUBWOOFER** 55 W
(Total effective impedance: 4 Ω)
**100 Hz–15 kHz**
**FRONT** 40 W per ch (6 Ω)
**CENTER** 45 W (8 Ω)
**SURROUND** 35 W per ch (8 Ω)
**Total power in stereo mode (10% THD)**
(FRONT and SUBWOOFER) 135 W
**Total power in DOLBY DIGITAL mode (10% THD)** 250 W
**Input sensitivity**
**AUX 1, AUX 2** 250 mV
**Input impedance**
**AUX 1, AUX 2** 13.3 kΩ
**Digital input**
**Optical** 1
**Coaxial** 1

## FM TUNER SECTION

**Frequency range**
87.9–107.9 MHz (200 kHz step)
87.5–108.0 MHz (100 kHz step)
**Sensitivity** 2.5 µV (IHF)
**S/N 26 dB** 2.2 µV
**Antenna terminals** 75 Ω (unbalanced)

## AM TUNER SECTION

**Frequency range**
520–1710 kHz (10 kHz step)
**Sensitivity**
**S/N 20 dB (at 1000 kHz)** 560 µV/m

## CASSETTE DECK SECTION

**Track system** 4 track, 2 channel
**Heads**
**Record/playback** Solid permalloy head
**Erasure** Double gap ferrite head
**Motor** DC servo motor
**Recording system** AC bias 100 kHz
**Erasing system** AC erase 100 kHz
**Tape speed** 4.8 cm/s ($1^{7}/_{8}$ ips)
**Overall frequency response (+3, –6 dB at DECK OUT)**
**NORMAL (TYPE I)** 35 Hz–14 kHz
**S/N ratio** 50 dB (A_WTD)
**Wow and flutter** 0.18% (WRMS)
**Fast forward and rewind time**
Approx. 120 seconds with C-60 cassette tape

## DISC SECTION

**Sampling frequency** 44.1 kHz
**Decoding** 16 bit linear
**Beam source/wavelength**
Semiconductor laser/780 nm
**Number of channels** Stereo
**Frequency response**
20 Hz–20 kHz (+1, –2 dB)
**Wow and flutter** Below measurable limit
**Digital filter** 8 fs
**D/A converter** MASH (1 bit DAC)

## SPEAKER SECTION

**Front speakers SB-AK600**
**Type** 3 way speaker bass-reflex system
**Speakers**
**Subwoofer** 12 cm ($4^{3}/_{4}$″) cone type
**Woofer** 12 cm ($4^{3}/_{4}$″) cone type
**Tweeter** 6 cm ($2^{3}/_{8}$″) cone type
**Impedance**
**FRONT** 6 Ω
**SUBWOOFER** 8 Ω
**Input power**
**FRONT** 90 W (Music)
**SUBWOOFER** 70 W (Music)
**Output sound pressure level**
87 dB/W (1.0 m)
**Cross over frequency** 150 Hz, 5 kHz
**Frequency range**
45 Hz–22 kHz (–16 dB)
55 Hz–20 kHz (–10 dB)
**Dimensions (WxHxD)**
207 x 315 x 295 mm
($8^{5}/_{32}$″ x $12^{13}/_{32}$″ x $11^{5}/_{8}$″)
**Mass** Approx. 3.7 kg (8.2 lb.)

**Surround speakers SB-PS90**
**Type** 1 way, 1 speaker, closed system
**Speaker**
**Full range** 8 cm ($3^{1}/_{8}$″) cone type
**Impedance** 8 Ω
**Input power** 70 W (Music)
**Output sound pressure level**
84 dB/W (1.0 m)
**Frequency range**
130 Hz–20 kHz (–16 dB)
150 Hz–18 kHz (–10 dB)
**Dimensions (WxHxD)**
140 x 99 x 118 mm
($5^{1}/_{2}$″ x $3^{29}/_{32}$″ x $4^{21}/_{32}$″)
**Mass** Approx. 0.9 kg (2.0 lb.)

**Center speaker SB-PC93**
**Type** 1 way, 1 speaker, closed system
**Speaker**
**Full range** 8 cm ($3^{1}/_{8}$″) cone type
**Impedance** 8 Ω
**Input power** 70 W (Music)
**Output sound pressure level**
84 dB/W (1.0 m)
**Frequency range**
130 Hz–20 kHz (–16 dB)
150 Hz–18 kHz (–10 dB)
**Dimensions (WxHxD)**
140 x 99 x 118 mm
($5^{1}/_{2}$″ x $3^{29}/_{32}$″ x $4^{21}/_{32}$″)
**Mass** Approx. 0.8 kg (1.8 lb.)

## GENERAL

**Power supply** AC 120 V, 60 Hz
**Power consumption** 180 W
**Dimensions (WxHxD)**
215.4 x 315 x 350 mm
($8^{1}/_{2}$″ x $12^{13}/_{32}$″ x $13^{25}/_{32}$″)
**Mass** For U.S.A.: Approx. 7.1 kg (15.7 lb.)
For Canada: Approx. 6.7 kg (14.8 lb.)

**Power consumption in standby mode**
0.34 W

**Note:**
1. Specifications are subject to change without notice.
   Mass and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

As an ENERGY STAR® Partner, Panasonic has determined that this product meets the ENERGY STAR® guidelines for energy efficiency.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